

REMARKS

The Examiner rejected claims 10-13, 14-17, 23-27 under 35 U.S.C. 103(a) as being unpatentable over US 6637506 to Gektin et al. in view of US 5880524 to Xie. Applicants believe the Examiner meant to reject claims 10-12, 14-17 and 23-27 and not claim 13 based US 6637506 to on Gektin et al. in view of US 5880524 to Xie.

The Examiner rejected claims 13 and 28 under 35 U.S.C. 103(a) as being unpatentable over US 6637506 to Gektin et al. US 5880524 to Xie in view of US 5933323 to Bhatia et al.

The Examiner rejected claims 23-32 under 35 U.S.C. 112 (first paragraph).

Applicants respectfully traverse the §112 and §103 rejections with the following arguments.

35 USC § 112

The Examiner rejected claims 23-32 under 35 U.S.C §112, first paragraph stating "Claims 23-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation 'first coefficient of thermal expansion between about 25% to about 700% of second coefficient of thermal expansion' is not originally disclosed in the specification.."

In response, Applicants note, first the Examiners rejection is moot in light of applicants cancellation of claims 23-32 and second, because Applicants have added new claims with the same limitation, that the limitation "about 25% to about 700% of the second coefficient of thermal expansion" is disclosed in the original specification can be found page 4, lines 13-14 and page 9, lines 9-11 of Applicants specification.

35 USC § 103 Rejections

As to claim 10, the Examiner states that "Regarding claim 10, Gekkin discloses a method for dissipating heat from an electronic package having one or more components in fig. 1A_3 comprising: providing a substrate 102, column 3 line 8, having a first coefficient of thermal expansion (CTE); attaching a lid 106, column 3 line 9, to said substrate 102, the lid 106 having a second CTE; the second CTE about equal to the first CTE (the lid or heat spreader as explained in fig. 2 having a perimeter portion 204 comprises SiC or AlSiC, column 4 line 39, having a CTE compatible to the substrate, column 5 lines 55-56); providing a solid thermal transfer medium 108, column 3 line 9, in direct contact with a back surface of each component 104, column 3 line 9, and an outer surface of a lower wall, fig. 1A, mounting each component 104 directly to the top surface of the substrate 102, fig. 1A; and electrically connecting each component to a top surface of said substrate 102, fig. 1A. But Gekkin does not disclose the lid 106 including a chamber vapor. However, Xie discloses an electronic package in fig. 1A comprising a substrate 102, an IC 106, a lid 104 having a chamber vapor 120. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the vapor chamber teaching of Xie with the lid 106 of Gekkin, because it would have reduced the heat flux at the surface of high power semiconductor package as taught by Xie in column 1 lines 55-57."

Applicants contend that claim 10, as amended, is not obvious in view of Gekkin et al in view of Xie because Gekkin et al in view of Xie does not teach or suggest every feature of claim 10. As a first example, Gekkin et al in view of Xie does not teach or suggest "providing a peripheral lid support, said lid support having sidewalls defining a cavity open at top and bottom

surfaces of said lid support." Applicants respectfully point out that neither Getkin et al or Xie disclose a lid support.

As a second example, Getkin et al in view of Xie does not teach or suggest "attaching said top surface said peripheral lid support to a bottom surface of said sidewalls of said lid and attaching said bottom surface of said peripheral lid support to a periphery of said substrate, said bottom wall of said lid not attached to said peripheral lid support." Applicants respectfully point out that both Getkin et al and Xie disclose the lid attached to the substrate and not to peripheral lid support as Applicants claim requires.

Based on the preceding arguments, Applicants respectfully maintain that claim 10 is not unpatentable over Getkin et al in view of Xie and is in condition for allowance. Since claims 11-22 and 33-42 depend from claim 10, Applicants respectfully maintain that claims 11-22 and 33-42 are likewise in condition for allowance.

As to claim 13, the Examiner states that "Regarding claims 13 and 28, Gektin does not discloses the method of claim 10, wherein said lower wall of said lid has protruding regions for maintaining equivalent contact with said thermal transfer medium on thin components of said components as is maintained by thin regions on thick components of said components. But Bhatia discloses the method in fig. 5 wherein said lower wall of said lid 510, column 6 line 13, has protruding region (portion in contact with 520) for maintaining equivalent contact with said thermal transfer medium on thin components 520 of said one or more components as is maintained by thin regions on thick components 522 of said one or more components. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use the lid having a protruding portion teaching of Bhatia with Gektin's method, because it would

have provided a good thermal dissipation for the IC having different heights as taught by Bhatia, column 6 lines 34-40."

First, Applicants are unable to respond fully to the Examiners rejection of claim 13, because Applicants are unsure of how the Examiner is using Xie. Applicants are concerned that the Examiner is relying on Bhatia et al. modifying Xie which in turn is modifying Gektin et al. which is a modification of secondary reference by another secondary reference. Applicants believe the Examiner means to modify Xie, with Bhatia to introduce a "protruding region" of a wall of a vapor chamber that can only exist when Gektin et al is modified by Xie to introduce the vapor chamber. Accordingly, Applicants respectfully maintain that the rejection of claim 13 under 35 U.S.C. §103(a) is improper and should be withdrawn

Second, Applicants contend that claim 13, as amended, is not obvious in view of US 6637506 to Gektin et al.US 5880524 to Xie in view of US 5933323 to Bhatia et al because US 6637506 to Gektin et al.US 5880524 to Xie in view of US 5933323 to Bhatia et al does not teach or suggest every feature of claim 13. As a first example, US 6637506 to Gektin et al.US 5880524 to Xie in view of US 5933323 to Bhatia et al does not teach or suggest "said first regions thicker than said second regions." Applicants respectfully point out that in Bhatia et al., lid 510 of FIG. 5 is of uniform thickness.

Based on the preceding arguments, Applicants respectfully maintain that claim 13 is not unpatentable over US 6637506 to Gektin et al.US 5880524 to Xie in view of US 5933323 to Bhatia et al and is in condition for allowance.

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact the Applicants' representative at the telephone number listed below. The Director is hereby authorized to charge and/or credit Deposit Account 09-0457.

Respectfully submitted,
FOR: Alcoe et al.

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